

CLAIMS

1. A DC-AD converter, comprising:

a transformer having a primary winding and at least one secondary winding;

a semiconductor switching circuit for allowing electric current to flow from a DC power supply through said primary winding in a first or a second direction;

a current detection circuit for detecting the current flowing through said load connected to the secondary winding to output a current detection signal;

a voltage detection circuit for detecting the voltage applied to said load to output a voltage detection signal;

a current-error signal generating circuit for generating a current-error signal based on said current detection signal and a current reference signal;

a voltage-error signal generating circuit for generating a voltage-error signal based on said voltage detection signal and a voltage reference signal;

a feedback signal formation circuit for forming a feedback signal in accordance with the magnitudes of said current-error signal and voltage error signal; and

a switch drive circuit for forming a drive signal for switching on and off said semiconductor switching circuit in accordance with said feedback signal.

2. The DC-AC converter according to claim 1, wherein said switch drive

circuit includes a PWM signal generation circuit for generating a PWM signal, upon receipt of a triangular wave signal from said triangular wave signal generation circuit and said feedback signal, by comparing said triangular wave signal and feedback signal.

3. The DC-AC converter according to claim 1, wherein said feedback signal formation circuit includes:

a current-error control transistor having a control input for receiving said current-error detection signal; and

a voltage-error control transistor having a control input for receiving said voltage-error detection signal, wherein

said voltage-error control transistor is connected in parallel with said current-error control transistor so as to output said feedback signal from the node where said voltage-error control transistor is connected in parallel with said current-error control transistor.

4. The DC-AC converter according to any one of claims 1-3, further comprising a feedback signal control circuit adapted to change said feedback signal so as to reduce the electric power supplied to said load when the DC power supply voltage of said DC power supply sharply rises.

5. The DC-AC converter according to claim 4, wherein said feedback signal control circuit includes:

a sharp-voltage-change detection circuit receiving said DC power supply voltage and adapted to generate a sharp-voltage-change signal by differentiating said DC power supply voltage; and

a reduction circuit connected between a node having the potential

of said feedback signal and a node having a predetermined potential, and controlled by said sharp-voltage-change signal.

6. The DC-AC converter according to claim 5, wherein:

said reduction circuit includes a series circuit of a transistor switch and a resistor; and

said sharp-voltage-change detection circuit includes a series circuit of a capacitor and a resistor.

7. A controller IC, adapted to drive a semiconductor switching circuit for flowing current from a DC power supply through a primary winding of a transformer in a first or a second direction to supply AC power to a load connected to a secondary winding of said transformer, said controller IC comprising:

a feedback signal formation circuit for forming a feedback signal in accordance with the magnitudes of a current-error signal and a voltage-error signal, said current-error signal generated based on both a current detection signal associated with the current flowing through said load and a current reference signal, and said voltage-error signal generated based on both a voltage detection signal associated with the voltage applied to said load and a voltage reference signal; and

a switch drive circuit adapted to form a drive signal for switching on and off said semiconductor switching circuit in accordance with said feedback signal.

8. The controller IC according to claim 7, wherein said switch drive circuit includes a PWM signal generation circuit for generating a PWM

signal, upon receipt of said triangular wave signal from said triangular wave signal generation circuit and said feedback signal, by comparing said triangular wave signal and feedback signal.

9. The controller IC according to claim 7, wherein said feedback signal formation circuit includes:

a current-error control transistor having a control input for receiving said current-error detection signal; and

a voltage-error control transistor having a control input for receiving said voltage-error detection signal, wherein

said voltage-error control transistor is connected in parallel with said current-error control transistor so as to output said feedback signal from the node where said voltage-error control transistor is connected in parallel with said current-error control transistor.

10. The controller IC according to any one of claims 7-9, wherein said feedback signal is changed so as to reduce the electric power supplied to said load when the DC power supply voltage of said DC power supply sharply rises.

11. The controller IC according to any one of claims 7-9, further comprising a feedback signal control circuit adapted to change said feedback signal so as to reduce the electric power supplied to said load when the DC power supply voltage of said DC power supply sharply rises.

12. The controller IC according to claim 11, wherein said feedback signal control circuit includes:

a sharp-voltage-change detection circuit receiving said DC power supply voltage and adapted to generate a sharp-voltage-change signal by differentiating said DC power supply voltage; and

a reduction circuit connected between a node having the potential of said feedback signal and a node having a predetermined potential, and controlled by said sharp-voltage-change signal.

13. The controller IC according to claim 12, wherein:

said reduction circuit includes a series circuit of a transistor switch and a resistor; and

said sharp-voltage-change detection circuit includes a series circuit of a capacitor and a resistor.

14. An electronic apparatus equipped with:

a battery;

a DC-AC converter in accordance with any one of claims 1-6 for generating AC power from the DC voltage of said battery; and

a light emitting apparatus driven by said AC power supplied from said DC-AC converter.

15. The electronic apparatus according to claim 14, wherein said light emitting apparatus is a CCFL.